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IN THE CLAIMS

1. (Previously presented) A process for polymerizing one or more vinylically-unsaturated monomers to form a polymeric product, comprising:
contacting said vinylically-unsaturated monomers with a chain transfer catalyst and a hydrogen atom donor molecule in the absence of conventional free radical initiators, at a temperature from about room temperature to about 240 °C.
2. (Currently amended) A process for polymerizing one or more vinylically-unsaturated monomers by contacting said vinylically-unsaturated monomers with a ~~glyoximate-based cobalt~~ chain transfer catalyst and a hydrogen gas in the absence of conventional free radical initiators, said process carried out at a temperature from about room temperature to about 240 °C, ~~the catalyst is selected from hydrogen bridged bisglyoximate ligands.~~
3. (Currently amended) ~~A process for polymerizing one or more vinylically-unsaturated monomers by contacting said vinylically-unsaturated monomers with a cobalt chain transfer catalyst and a hydrogen gas in the absence of conventional free radical initiators, said process carried out at a temperature from about room temperature to about 240 °C, optionally in the presence of a solvent; The process of claim 1 or 2,~~ said process further comprising the addition of an electron donor.
4. (Currently amended) The process of Claim 1 or 2, ~~2 or 3~~, wherein the temperature is from about 50°C to 150°C.
5. (Currently amended) The process of Claim 1 or 2 wherein the chain transfer catalyst is selected from the group consisting of cobalt(II) and cobalt(III) chelates and a mixture thereof.
6. (Currently amended) The process of Claim 1 or 2, ~~2 or 3~~, wherein said process is a batch process.
7. (Currently amended) The process of Claim 1 or 2, ~~2 or 3~~, wherein said process is a semi-batch or starved feed process.

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8. (Currently amended) The process of Claim 1 or ~~2, 2 or 3~~, wherein said process is a continuous process.

9. (Previously presented) The process of Claim 1, wherein the hydrogen atom donor is selected from dihydronaphthalene, silicon hydrides, tin hydrides, organometallic hydrides, benzylic alcohols, hydroquinones, alkyl ether hydroquinones, and benzhydrol.

10. (Previously presented) The process of Claim 9, wherein the hydrogen atom donor is dihydronaphthalene, triethylsilane, tributyltin hydride, hydroquinone, methyl ether hydroquinone, tetraethylcyclotetrasiloxane, methyldimethoxysilane, tetramethyldisiloxane, trimethylsilane, or benzhydrol.

11. (Currently amended) The process of Claim 1 or ~~2, 2 or 3~~, wherein the process is conducted in the presence of a solvent selected from the group consisting of ketones; alcohols; amides; aromatic hydrocarbons; ethylene glycol; glycol ethers, alkyl esters, mixed ester ethers; and mixtures thereof.

12. (Currently amended) The process of Claim 1 or ~~2, 2 or 3~~, wherein at least one monomer is selected from the group consisting of Class I monomers.

13. (Currently amended) The process of Claim 1 or ~~2, 2 or 3~~, wherein at least one monomer is selected from the group consisting of Class II monomers.

14. (Currently amended) The process of Claim 1 or ~~2, 2 or 3~~, wherein at least one monomer is selected from Class I and Class II.

15. (Currently amended) The process of claim 12 or 14 wherein the resulting product is terminally unsaturated.

16. (Currently amended) The process of Claim 1 or 2 ~~or 3~~, wherein the hydrogen pressure is from 0.01 to 100 atmospheres.

17. (Currently amended) The process of Claim 1 or 2 ~~or 3~~, wherein the hydrogen pressure is from 1 to 10 atmospheres.

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18. (Canceled)

19. (Canceled)

20. (Previously presented) A product produced by the process of Claim 1, or 2 or 3.

21. (Currently amended) A finished product comprising a product of Claim 20, said finished product selected from: non-metallic chain transfer agents, non-aqueous dispersed polymers, block copolymers, microgels, star polymers, branched polymers, structured polymers and ladder polymers.

22. (Currently amended) A finished product comprising a product of Claim 20, said finished product selected from: non architectural coatings; automotive finishes, including high solids, aqueous and solvent-based finishes; high-build maintenance finishes and other paints; printing inks including ink jet inks and UV/EB curable inks; multilayer coatings; varnishes; crosslinking agents; defoamers; deaeraters; wetting agents; substrate wetting additives; surface control additives; reactive surface control additives; hydrophobing agents; antigraffiti agents; nucleating agents; personal care products; masks for screen printing; dental filling materials; adhesives; lubricants; oil drilling fluids; adhesion promoters; coupling agents; dispersants; grinding agents; solder masks; tackifiers; leveling agents; artificial stone and marble; impact modifiers; compatibilizers; plasticizers; caulks; sealants; drug delivery agents; electronic materials; processing aids; antistatics; softeners; antioxidants; UV stabilizers; dispersion media; release agents; ion exchange resins or membranes; molded objects; extruded objects; chain transfer reagents; photopolymerizable materials; and etch or permanent resists for printed electronic circuits.

23. (Currently amended) A ~~product of Claim 20~~ finished product of claim 22 selected from: non polyurethanes, polyurethane foams, polyurethane adhesives and polyurethane finishes.

24. (Currently amended) The process of claim 1 or 2, wherein said process is carried out in the presence of a solvent.

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25. (Previously presented) The process of claim 11, wherein said ketone is selected from acetone, butanone, pentanone and hexanone.

26. (Previously presented) The process of claim 11, wherein said alcohol is isopropanol.

27. (Previously presented) The process of claim 11, wherein said amide is dimethyl formamide.

28. (Currently amended) The process of claim 11, wherein said aromatic hydrocarbon is selected from toluene and ~~zylene~~ xylene.

29. (Currently amended) The process of claim 11, wherein said ether is selected from tetrahydrofuran and ~~diethyle~~ diethyl ether.

30. (Currently amended) The process of claim 11, wherein the mixed ester ether is a monoalkyl ether monoalkanoate.

31. (New) The process of claim 1 or 2, wherein the catalyst is a glyoximato-based cobalt chain transfer catalyst.

32. (New) The process of claim 1 or 2, wherein the catalyst is selected from hydrogen bridged bisglyoximato ligands.

33. (New) The process of claim 1 or 2, wherein said process is carried out in the presence of an electron donor.